



TO: Wisconsin Legislature

FROM: Don Nelson
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DATE: February 20, 2008

SUBJECT: AB 766/SB 456, Construction of a TomoTherapy Addition to the School of Veterinary Medicine at the UW-Madison.

Senator Fred Risser and Representative Jake "Doc" Hines have authored legislation that would authorize the construction of an addition to the School of Veterinary Medicine at the UW-Madison. This legislation would allow the school to take advantage of gifts and grants that would cover the entire cost of the project in a timely fashion. As you consider supporting this legislation, the following information provides additional background on the proposed project.

School of Veterinary Medicine TomoTherapy Addition

The Wisconsin School of Veterinary Medicine (SVM) and the Veterinary Medical Teaching Hospital (VMTH) is one of 28 schools in the United States, and accepts 80 students each year into its four-year program leading to the degree of Doctor of Veterinary Medicine (DVM). A minimum of 60 of the 80 seats per class are reserved for Wisconsin residents, and over one half of SVM graduates remain in Wisconsin to practice their profession. The VMTH is the primary site for the clinical education of veterinary medical students and of graduate veterinarians seeking advanced training in a clinical specialty. Clients and patients of the Small Animal Hospital are referred for diagnosis and treatment by veterinarians throughout Wisconsin and the surrounding area. The VMTH, opened a quarter century ago, was designed to accommodate approximately 12,000 patient visits annually. While the number of patient visits has grown from 14,681 to 20,275 in the ten year period from 1996 to 2006, the footprint of the VMTH has not been expanded.

Comparative medicine and clinical oncology

The diseases of animals, including cancer, closely mirror diseases in humans. Consequently, much of the knowledge obtained through basic and clinical research and patient care in humans can be applied to animals, and vice versa. Using this approach of "one medicine," the SVM clinical oncology section works in close collaboration with the UW Hospital Comprehensive Cancer Center to enhance health care delivery for both animals and humans. The SVM has one of the top veterinary oncology programs in the nation. Since 1996, small animal oncology cases alone have doubled from 1884 to 3785 a year. By 2006, oncology care represented 21 percent of all small animal cases, the highest demand among the VMTH specialty and primary care services. As is the case in humans, numerous types of cancer in domestic animals are most effectively treated by radiation therapy.

Current technology for delivery of radiation therapy and its limitations

The SVM continues to rely on the use of a cobalt 60 radiation unit, installed a quarter century ago, for delivery of radiation therapy to animals with cancer. The maintenance of this instrument, due to its age, is expensive and difficult. In addition, funding agencies are reluctant to fund research using such an

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outdated unit. From the perspective of clinical care, the existing cobalt 60 unit can deliver effective radiation therapy to tumors, but it cannot sufficiently focus the radiation beam to avoid the exposure of surrounding normal tissues to harmful radiation. As a result, these normal tissues sustain severe injury. For example, radiation therapy of brain tumors or tumors in the nasal septum will often result in the loss of vision in one or both eyes.

What is TomoTherapy and what are its advantages?

TomoTherapy, developed at the UW-Madison, is a unique combination of a radiation treatment instrument (linear accelerator) and a helical computerized tomography (CT) scanner. This combination of technologies is far superior to any other current technology in delivering precisely localized and controlled radiation to a tumor, while sparing surrounding normal tissues.

The SVM clinical oncology and radiation oncology faculty were closely involved with the testing and validation of TomoTherapy, and have developed great expertise in its use in animals. Indeed, VMTH patients (pet dogs with nasal tumors) were the first clinical patients to benefit from TomoTherapy, and based in part on the excellent results from these cases, TomoTherapy is now being adopted in human hospitals nationwide. The availability of TomoTherapy in the VMTH will markedly enhance the treatment of cancer and reducing the suffering of these beloved pets.

Why is this addition requested at this time?

Clinical patients of the VMTH oncology section have, in the past, had access to TomoTherapy units in the UW Hospital. Due to the high demand for the use of these units for human patients, however, that access is no longer available. A typical TomoTherapy unit costs more than \$3 million, a cost that would normally place it beyond the budgetary reach of the SVM. Because the SVM assisted with initial trials and because the parent company is located in Madison, however, TomoTherapy has offered the school a new unit, reengineered for animal use, at a markedly reduced price. To take advantage of this extraordinary opportunity, the SVM must move quickly to provide space to house and use the TomoTherapy unit. As noted earlier, the VMTH already accommodates far more patient visits than provided for in its original design. Consequently, space for a TomoTherapy unit can be created only by expanding the current facility with a 3,570 ASF/5,200 GSF addition.

Where will this facility be located?

The addition will be located on the northeast side of the current SVM Building, and will include space for the TomoTherapy unit, a control area where veterinarians and technicians manage the operation of the unit, an area to prepare animals for the procedures, a small conference room and mechanical space. There will be no external entrance to the addition, which will connect internally to the existing hospital. Part of the building site is now used for bicycle parking which will be replaced elsewhere on the site.

What is the budget source for this project?

No state funds will be used for this project. The estimated budget for this addition, just exceeding \$2.5 million, will come from gift funds.

I hope this information provides greater detail on the legislation. If you have any further questions about this bill, please feel free to contact me at 265-4105.



Statement of Support, SB 456

Chairman Vinehout, distinguished members of the Committee on Agriculture and Higher Education:
I am Daryl Buss, Dean of the University of Wisconsin-Madison's School of Veterinary Medicine.

I am before you today to indicate my strong support of Senate Bill 456, providing for an addition to the 2007-09 Authorized State Building Program. That addition involves a small expansion of our Veterinary Medical Teaching Hospital to permit the installation of a TomoTherapy unit for the treatment of various types of cancers in animals.

The diseases of animals, including cancer, closely mirror diseases in humans. Consequently, much of the knowledge obtained through basic and clinical research and patient care in humans can be applied to animals, and vice versa. Using this approach of "one medicine," our clinical oncology section in the School of Veterinary Medicine works in close collaboration with the UW Hospital Comprehensive Cancer Center to enhance health care delivery for both animals and humans. The SVM has one of the top veterinary oncology programs in the nation. Since 1996, small animal oncology cases have doubled, to nearly 4,000 cases per year. By 2006, oncology care represented 21% of all of the companion animal cases in our teaching hospital, the highest demand among all of our specialty and primary care services. As is the case in humans, numerous types of cancer in domestic animals are most effectively treated by radiation therapy. In fact, radiation therapy is second only to surgery as the most curative form of cancer treatment in both veterinary and human medicine. Unfortunately, high energy radiation not only kills cancer cells, but also damages or kills normal cells. Moreover, some organs, such as the eye are especially sensitive to radiation injury.

Our Veterinary Medical Teaching Hospital currently provides radiation therapy with a Cobalt⁶⁰ radiation therapy unit installed when the VMTH opened a quarter century ago. While this therapeutic tool is effective, it has many disadvantages compared to TomoTherapy, the unit we wish to add to our hospital. For example, the old technology we now employ does not allow us to precisely control the extent of tissue exposed to radiation. That lack of precision, in comparison to TomoTherapy, means that a much larger volume of normal tissue is exposed to the damaging effects of radiation along with the tumor, and that unintended exposure carries real consequences. For example, radiation therapy of brain tumors or tumors in the nasal septum with our existing unit often results in the loss of vision in one or both eyes. Tumors of the mouth and oral cavity are also common in dogs. Our current radiation therapy, while effective against these tumors, also causes destruction of normal teeth and soft tissue, painful inflammation of the lining membranes of the oral cavity, and depending on tumor location, often produces blindness. In addition to its lack of precision, the Cobalt⁶⁰ unit produces a much lower energy beam compared to TomoTherapy. That means treatment with the Cobalt⁶⁰ unit takes longer. Since animals must be anesthetized so they will be motionless during radiation therapy, this means longer times under anesthesia and increased risk. Finally, the longer radiation exposure time means that fewer patients can be treated in the course of a day.

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So, from a patient welfare and standard of care perspective, the addition of TomoTherapy is important. It is also an addition we want to institute as soon as possible so we can minimize the unintended radiation injury that is experienced with our existing unit.

In addition to the overriding patient care issues, the Cobalt⁶⁰ instrument, because of its age, creates other problems. The cost of maintaining the unit, including the ability to procure replacement parts, is expensive and difficult. Because it such an old technology, funding agencies are increasingly reluctant to provide funding for clinical trials that involve such an aged and unreliable piece of equipment.

Why TomoTherapy?

In contrast to the Cobalt⁶⁰ unit I have described, TomoTherapy is the newest technology in radiation therapy. A TomoTherapy unit is basically a combination of a high resolution CT scanner with a linear accelerator that produces the radiation beam. This new technology allows the oncologist to locate and precisely measure and identify the boundaries of the tumor, and then program the instrument to guide the radiation beam to treat only the tumor, sparing nearby normal tissue from radiation. Additionally, TomoTherapy will allow our radiation oncologists to vary the level of energy of the radiation beam so they can tailor the energy to the specific tumor type, creating greater efficacy and fewer side effects.

Because the SVM assisted with initial trials and the clinical validation of TomoTherapy prior to its use in humans, this Madison-based company have offered the school a new unit, re-engineered for animal use, at a very attractive price. To take advantage of this extraordinary opportunity, the SVM must move quickly to provide space to house and use the TomoTherapy unit. It is the creation of that space, by a small expansion, approximately 5,200 GSF, of our Veterinary Medical Teaching Hospital, that is the subject of this bill.

The Veterinary Medical Teaching Hospital is the primary site for the clinical education of veterinary medical students and of graduate veterinarians seeking advanced training in a clinical specialty. Clients and patients of the Small Animal Hospital are referred for diagnosis and treatment by veterinarians throughout Wisconsin and the surrounding area. The hospital, opened a quarter century ago, was designed to accommodate approximately 12,000 patient visits annually. In the ten year period from 1996 to 2006 alone, the number of patient visits per year has grown from 14,681 to 20,275. However, the footprint of the VMTH has not been expanded. That increase in clinical activity has been possible only by many small-scale renovations over the years that progressively converted any space, however minor and potentially inefficient, into clinical use. That intensity of space use within the Veterinary Medical Teaching Hospital, combined with the shielding and technical requirements of TomoTherapy, mean that the unit cannot be housed within the existing hospital.

The addition will be located on the northeast side of our building, and will include space for the TomoTherapy unit, a control area where veterinarians and technicians manage the operation of the unit, an area to prepare animals for the procedures, a small conference room and mechanical space. The estimated budget for this addition just exceeds \$2.5 million, and will come from gift funds. No state funds will be used for this project.

There is a time urgency in creating this facility as soon as possible, so I urge your support of AB 766 and the inclusion of this project in the 2007-09 Authorized State Building Program. All of us want to move away from a technology that creates unintended radiation injury when the technology of TomoTherapy exists, and we now have the opportunity to add it without the use of state funds.

Thank you for this opportunity to speak with you today. I will leave copies of my comments with you, and I would be pleased to respond to your questions at this time.



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Bill Position
University of Wisconsin System
2007-08 Legislative Session

AB766-SB456
Enumeration for Additional Capital Project for TomoTherapy
at UW-Madison's School of Veterinary Medicine

LEGISLATION

(Hines/Risser) At the December 2007 Board of Regents meeting, Regents approved Resolution I.3.F (Full Agenda p. 160) requesting enumeration of this additional capitol project at UW-Madison's School of Veterinary Medicine to house a TomoTherapy machine.

Financed with no additional cost through to the state, the entire \$2,546,000 for the project is provided through gifts and grants to the school.

This bill provides the legislative approval necessary to amend the State Building Program for that specific purpose.

Referred to:

AB766 - Referred to Committee on Public Health on 2/6/08. Public hearing scheduled on 2/13/08.

SB456 - Referred to Committee on Agriculture and Higher Education on 2/05/08.

UW SYSTEM POSITION

Support: This project will construct an addition to the School of Veterinary Medicine (SVM) to house a veterinary TomoTherapy unit. The SVM has one of the top veterinary oncology programs in the nation. The school's existing Cobalt 60 radiation unit can treat cancers in pets, however the unit is outdated. TomoTherapy pinpoints treatment of tumors near the eye or other sensitive tissues, avoiding damage or loss of organs during treatment.

This would be the first TomoTherapy unit in use for veterinary medicine in the world. Without access to modern equipment, the school cannot continue to improve treatment for dogs with cancer because funding agencies are increasingly reluctant to support clinical trials involving aged and unreliable equipment such as the Cobalt 60 unit.

A typical TomoTherapy unit costs more than \$3 million, but because the School of Veterinary Medicine helped with initial trials and because the parent company is located in Madison, TomoTherapy is offering the school a new unit, reengineered for animal use.

